



# Antenna Systems

## • Overall Objective

- Increase the performance/cost ratio of DSN antennas and associated elements, and demonstrate efficient use of DSN resources

## • Goals and Products

- Develop 32 GHz capabilities for DSN antennas
- Develop new calibration techniques and microwave components to lower cost and improve performance: raster scan, ultra low loss ceramic waveguides, active surface amplifiers
- Compensate for efficiency roll-off of the 34m and 70m antennas by implementing a deformable flat plate
- Develop enabling capabilities for the Cassini Radio Science Experiment: beam aberration correction, antenna stability characterization, 800W Ka-band transmitter



***The 34-m Research and Development Beam Waveguide Antenna (DSS 13) at Goldstone, CA***

2.0 mdeg blind pointing  
Deformable flat plate demo at DSS-14  
Stability measurement while tracking  
Beam aberration demo at DSS-13

Active Surface Amps demo  
Ceramic waveguides launch  
Efficiency measurement  
precision to 1%

800 W TXR at DSS-25  
32-GHz grid array design  
for S/C application

Prescription retrieval for  
BWG mirror alignment

ASIC design for  
E&M antenna  
computations

